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ABSTRACT

This report presents the results of a spring 1982 survey of a random sample of Washington public schools which separated findings according to school level (elementary, middle, junior high, or high school) and district size (either less than or greater than 2,000 enrollment). A brief review of previous studies and a description of the survey procedures are followed by the findings for each of the 15 topics addressed by the survey: (1) percentage of schools using computers; (2) rotation of computers among schools; (3) number of computers in individual schools; (4) hours per week each computer is used; (5) brands and types of computers; (6) ways computers are used; (7) use of software in the classroom; (8) subject areas using software; (9) software sources; (10) peripherals used; (11) percent of staff using computers; (12) availability of inservice training; (13) availability of computer-related curricula; (14) existence of computer-oriented student learning objectives; and (15) projected computer-related expenditures. A summary of the findings for each educational level concludes the report. A 4-item reference list and 15 tables are included. A copy of the questionnaire and additional study data are appended. (LMM)

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STATE OF WASHINGTON COMPUTER USE SURVEY

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May 1983

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UNIVERSITY OF WASHINGTON
College of Education
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State of Washington Computer Use Survey

INTRODUCTION

Each year more and more schools are purchasing computers and implementing them into their instructional programs. A few national and regional studies (Edwards, 1979; Fisher and Dunn, 1981; National Center for Education Statistics, 1982; The Association of Washington School Principals, 1982) have addressed the current status of computer use in public and private schools. However, none have thoroughly addressed the question of the use of microcomputers in Washington State public schools K-12.

Edwards (1979) conducted a survey of superintendents and a survey of teachers known to be involved with computers across a six state region (Alaska, Hawaii, Idaho, Montana, Oregon and Washington). Results from the Washington State superintendents indicated that 66% of the responding districts used computers for administration and only 26% used computers for instruction. For the total sample, however, 59% of the districts used computers in administration and 34% used computers in instruction. Projections for 1982 indicated that across the six state region computer use would rise to 73% for administration and 58% for instruction. Edwards summarized,

> ... the most frequent current uses of computers were concentrated in areas of teaching about computers or teaching how to use computers. Computers were currently used less frequently as instructional tools. (p. 18)

A much more comprehensive study of Washington State schools, grades 4-12, was conducted by Fisher and Dunn in the spring of 1981. 72% responded to the survey. Of the schools responding, 89% were junior or senior high schools. Approximately 53% of the responding schools reported having computers. Of these, 44% had Radio Shack TRS-80s, 35% had Apples and 12% had Commodore PETs.

A small survey (n=27) conducted by the Association of Washington School Principals in 1982 found that the major use for computers was for instruction related to computer literacy. However, there was a strong indication that computers were also being used for remedial and gifted instruction.

On the national scale, a 1982 survey by the National Center for Education Statistics (NCES) indicates that the number of microcomputers available for instructional use in United States public schools has tripled since 1980. It is estimated that 35% of the public schools currently have at least one computer terminal or microcomputer. By grade level, approximately 60% of all secondary schools have at least one computer terminal or microcomputer and only about 20% of all elementary schools are so equipped.

The major use for microcomputers was for teaching computer science at the senior high school level, computer literacy and remedial work at the junior high school level and computer literacy and basic skills at the elementary school level.

Computer use in our society is escalating at a phenomenal rate and computer education is definitely on the increase. However, what is not clear is what is currently being done in public schools in the state of Washington. Considering the threefold growth nationally, changes from one year to the next may be exceptional. Therefore a survey of a random sample of public schools in the state of Washington was conducted. Schools were classified according to students served as elementary, middle, junior high or senior high school and according to district size as small ($n \leq 2000$) and large ($n > 2000$). This had not been done satisfactorily by previous studies. The major questions concerning computer use in Washington State public schools addressed by this survey are as follows:

1) What percentage of schools currently use computers?
2) What brands or types of computers are currently used?
3) How many computers are being used?
4) Are computers permanently placed in schools or are they rotated among schools?
5) What is the average amount of time computers are used each week?
6) What are the major sources of funding for computers and related materials?

7) What are the current uses of computers?

8) Is software currently used in classrooms?

9) What are major sources for obtaining software?

10) What subject areas are currently using software?

11) What peripherals are used with computers?

12) What percentage of the staff is actively involved in using computers?

13) Has computer-related inservice training been available to teachers?

14) How have teachers been trained when computer-related inservice was not available?

15) Do schools have computer-related student learning objectives (SLOs)?

16) What are the projected computer-related expenses for the next two years?

PROCEDURES

The survey form was constructed to require a simple check of options or a written numerical response. Options were selected based on responses from previous surveys, related literature, and professional opinions. Only those options which were felt to be the most significant (i.e. would be the most frequently selected) were included. A copy of resulting survey can be found in Appendix 1.

A simple random sample of schools in Washington State would tend to cluster around large population centers. Due to this possible geographic bias, an alternative sampling procedure was employed. There are nine Educational Service Districts (ESDs) in the state. Six small districts ($\leq$ 2000 student enrollment) and six large districts ($>$2000 student enrollment) were randomly sampled from each ESD. One elementary school, one middle school or junior high and one senior high school were then randomly sampled from each selected district. See Figure 1 for further clarification.

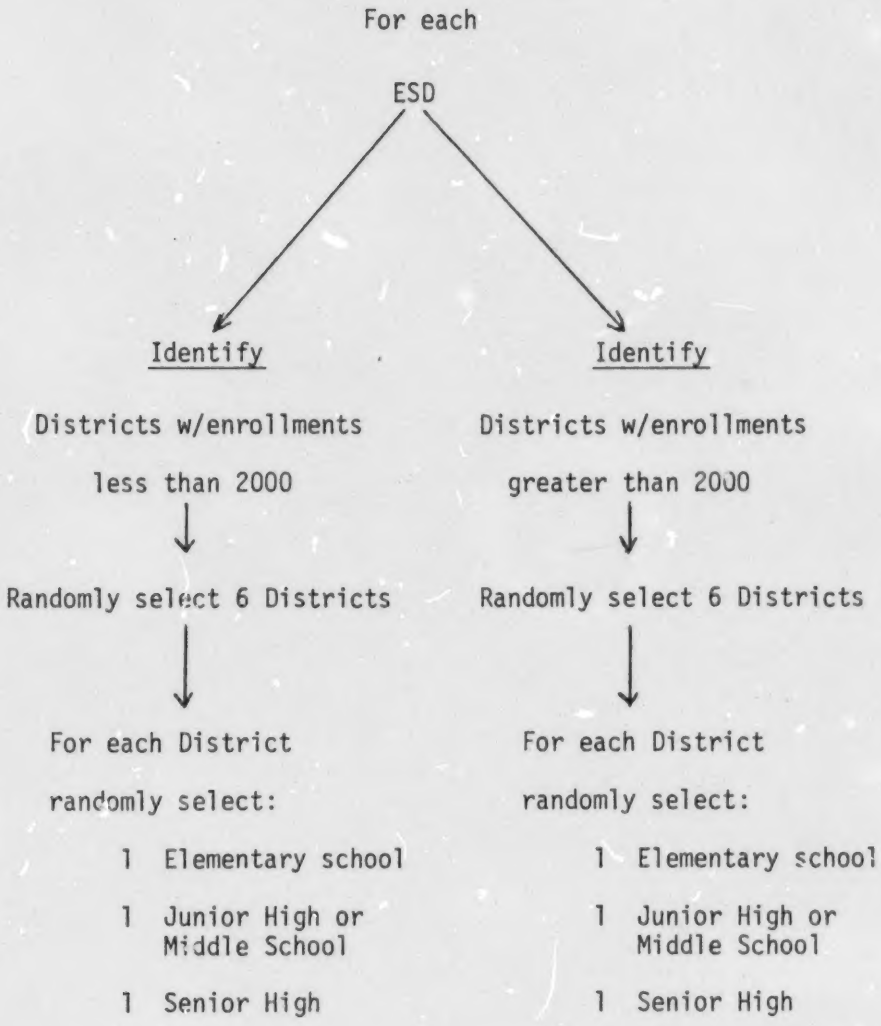

Figure 1: Method for Selecting of Schools

If an ESD did not have six large districts all large districts in that ESD were used. Most of the small districts had some junior high-senior high combinations. These junior high-senior high combinations were treated in the sampling and analyses as senior high schools. This resulted in a total sample of 273 schools across Washington State. By grade level, 105 elementary schools, 65 junior high or middle schools and 103 senior high schools were sampled. With respect to district size, 121 small district schools and 152 large district schools were sampled. A breakdown of the sampling by ESD, district size and grade level can be found in Appendix 2.

A follow-up mailing procedure was employed to maximize the number of returns. Initial mailings were sent in April 1982. The follow-up mailing was conducted one month later in May 1982. Each mailing consisted of the survey, a cover letter and a return envelope. The cover letter requested that the person most knowledgeable of the use of computers in the school, complete the form.

Analyses were done on a VAX 11/780 using SPSS, Statistical Package for the Social Sciences, for VAX/VMS, version M, release 9.1. The frequencies of responses were determined using the FREQUENCIES procedure command. Tests of significance, χ^2 and Analysis of Variance, were done using the CROSSTABS and ANOVA procedure commands respectively. Missing

values were not included in the analyses. Corrected χ^2 calculations were reported whenever available. These were available only for tests with 1 degree of freedom. All other χ^2 results use raw χ^2 scores.

FINDINGS

There was a 61% total return for the two mailings. Percentage of returns by grade and district size are shown in Table 1. A more comprehensive break down by ESD, grade, and district size can be found in Appendix 2.

Table 1

Percentage of Returns by District Size and Grade Level
for Washington State Public Schools
Computer Use Survey

	Elem	Jr. Hi.	Sr. Hi.	Total
Small District	46%	60%	63%	55%
Large District	65%	64%	69%	66%
Total	55%	63%	66%	61%

Six returns are listed as missing for grade related data due to insufficient information to identify the grade levels of the schools.

Are Computers Used in Schools?

About 67% of the schools responding currently use computers in their schools. (Henceforth, computers will mean both microcomputers and computer terminals.) Sixty-one per cent of the small district schools and 70% of the large district schools use computers. There was a highly significant grade level by computer use relationship observed ($\chi^2 = 34.77$, 2 df, $p < .001$).

Eighty-five per cent of senior high schools, 73% of the junior high schools and 36% of the elementary schools use computers. Appendixes 3A, 3B, and 3C provide additional breakdowns of computer use by ESD, grade level and district size.

Do Schools Rotate Computers Among Schools?

Very few schools reported sharing their computers with other schools on a rotating basis. Only 9 computers, about 2% of all computers reported, were used on a rotating basis.

How Many Computers Do Schools Have?

Overall there are approximately 2.63 computers per school for the total sample. This breaks down to about 1.2 computers per elementary school, 2.0 computers per junior high school and 4.3 computers per senior high school. These represent a significant relationship between grade level and number of computers per school.

Table 2

Average Number of Computers for
All Washington State Schools by Grade Level

Grade Level	Computers/School	# of Schools
Elementary	1.17	58
Junior High	1.95	41
Senior High	4.28	68
TOTAL	2.63	167

$F = 12.282$, 2 df, $p < .001$

Small district schools averaged about 1.7 computers per school whereas large district schools averaged about 4.0 computers per school. Again, there was a significant relationship between computer use and district size.

Table 3

Average Number of Computers for
All Washington State Schools by District Size

District Size	Computers/School	# of Schools
Small	1.73	71
Large	4.01	102
Total	2.63	173*

F = 4.475, 1df, p = .036
*Includes six cases previously noted as missing for grade level analysis.

If only schools where computers are reported as being used are considered, elementary schools average 3.24 computers per school, junior high schools average 2.96 computers per school, and senior high schools average 5.11 computers per school. This represents a significant relationship between computers per school and grade level.

Table 4

Average Number of Computers Per School
for Washington State Schools Using Computers by Grade Level

Grade Level	Computers/School	# of Schools
Elementary	3.24	21
Junior High	2.96	30
Senior High	5.11	58

F = 3.18, 2 df, p<.05

Similarly when schools were classified by district size, we found a nearly significant relationship between the number of computers per school and district size.

Table 5

Average Number of Computers per School for Washington State Schools Reporting Using Computers by District Size

District Size	Computers/School	# of Schools
Small	2.93	43
Large	5.93	72

F = 2.97, 2 df, p = .056

When the data were analyzed according to the number of students per computer in schools using computers, it was found that elementary schools average 184 students per computer, junior high schools average 237 students per computer and senior high schools average 379 students per computer. This represented a nearly significant relationship between number of students per computer and grade level.

Table 6

Number of Students per Computer in Washington State Schools Using Computers Classified by Grade Level

Grade Level	Computers/School	# of Schools
Elementary	184	21
Junior High	237	30
Senior High	379	58

F = 2.97 , 2 df, p = .056

When the same data were considered according to district size, we found small districts averaging 153 students per computer while large districts average 313 students per computer. Again, the average number of students per computer was significantly related to district size.

Table 7

Number of Students per Computer in Washington State Schools Using Computers Classified by District Size

District Size	Students/Computer	# of Schools
Small	153	43
Large	313	72

$F = 11.17$, 1 df, $p < .001$

How Many Hours Per Week is Each Computer Used?

The data were also analyzed on the basis of number of hours per week each computer was used. Overall, schools use computers about 18.5 hours per week. The amount of use was related significantly to grade level. Elementary schools report an average of 15 hours per week for computer use; junior high schools 16 hours per week; and senior high schools 21 hours per week.

Table 8

Average Number of Hours Washington State Schools Use Computers Each Week Classified by Grade Level

Grade Level	Hours/Week	# of Schools
Elementary	15	21
Junior High	16	30
Senior High	21	58

$F = 3.56$, 2 df, $p = .032$

Finally, no significant relationship was found with the average amount of computer use and district size.

What Kinds of Computers are Used in Schools?

Apple and TRS-80 microcomputers were the most frequent brands of computers used in Washington State schools. Apples are used in 55% of the schools that use computers. This particular brand was reported as being used by 52% of the elementary schools, 40% of the junior high schools, and 64% of the senior high schools. TRS-80s were reported in approximately 49% of the schools. These microcomputers from Radio Shack are used in 43% of the elementary schools, 47% of the junior high schools, and 52% of the senior high schools. Time-share terminals were the third most frequently reported brand or type of computer. All time-share terminals were ones connected to computers outside the school. Appendix 4A has additional information on types of computers used.

How are Computers Used in Schools?

The most frequent use of computers in the schools was for teaching programming. Sixty-eight per cent of the schools reported teaching programming. There was a highly significant ($\chi^2 = 9.83$, 2 df, $p = .007$) grade level relationship. Approximately 52% of the elementary schools, 53% of the junior high schools, and 81% of the senior high schools use computers to teach programming. Computer-assisted instruction (CAI) was a use reported by 71% of the elementary schools, 53% of the junior high schools, and 45% of the senior high schools. Fifty-two per cent of the schools, overall, use computers for CAI. Fifty-six per cent of

Table 9

Types of Computers Used in Washington Schools by Grade Level

(109 valid cases)

Type of Computer	Elementary		Junior High		Senior High		Total	
	Number (N=21)	*Per Cent	Number (N=30)	*Per Cent	Number (N=58)	*Per Cent	Number (N=109)	*Per Cent
Apple	11	52	12	40	37	64	60	55
Atari	1	5	2	7	1	2	4	4
Commodore	0	0	2	7	8	14	10	9
Texas Instrument	0	0	0	0	1	2	1	1
TRS-80	9	43	14	47	30	52	53	49
Time-Share	3	14	4	13	16	28	23	21
Other	0	0	2	7	6	10	8	7

*Respondents could mark more than one category, therefore, per cent may total more than 100%.

the schools use computers to teach about computers. Student use of computers outside of class was mentioned by 54% of the schools. There was a significant (χ^2 = 6.71, 2 df, p = .035) grade level relationship. Seventy per cent of the junior high schools, 53% of the senior high schools, and 33% of the elementary schools reported the use of the computers by students outside of class. See Table 10 for responses regarding other uses. Appendix 4B contains additional information by district size.

Do Schools Use Software in the Classroom?

Of schools that have computers, 68% use software in the classroom. Software is used in the classrooms of 67% of the elementary schools, 67% of the junior high schools, and 71% of the senior high schools.

What Subject Areas Use Software?

The most frequent subject area to be cited as using software was mathematics with 59% of the schools responding accordingly. Computer education was the next most frequent response with 40%. Use of software in language arts had a nearly significant grade level relationship (χ^2 = 5.58, 2 df, p = .062). Forty-three per cent of the elementary schools, 23% of the junior high schools and 17% of the senior high schools reported using software in language arts. Table 11 and Appendix 4C can be consulted for further summaries of related responses.

What are the Sources of Software?

The most frequent source for software for schools was computer vendors. This source for software was reported by 58% of the schools. The next two

Table 10

Current Uses of Computers in Washington Schools by Grade Level

(109 valid cases)

Type of Computer	Elementary		Junior High		Senior High		Total	
	Number (N=21)	*Per Cent	Number (N=30)	*Per Cent	Number (N=58)	*Per Cent	Number (N=109)	*Per Cent
CAI	15	71	16	53	26	45	57	52
Teach Programming	11	52	16	53	47	81	74	68
Administration	2	10	3	10	16	28	21	19
Class Management	4	19	7	23	21	36	32	29
Students outside of Class	7	33	21	70	31	53	59	54
Teach about Computers	9	43	18	60	34	58	61	56
Computer Clubs	1	5	6	20	8	14	15	14
Business Education	1	5	1	3	25	43	27	25
Vocational Education	1	5	0	0	9	16	10	9
Other Uses	4	19	5	17	6	10	15	14

*Respondents could mark more than one category, therefore, per cent may total more than 100%.

Table 11

Subject Areas in Which Software is Used in Washington Schools by Grade Level

(109 valid cases)

Subject	Elementary		Junior High		Senior High		Total	
	Number (N=21)	*Per Cent	Number (N=30)	*Per Cent	Number (N=58)	*Per Cent	Number (N=109)	*Per Cent
Mathematics	14	67	18	60	32	55	64	59
Language Arts	9	43	7	23	10	17	26	24
Reading	6	29	7	23	9	16	22	20
Business Education	1	5	1	3	24	41	26	24
History	2	10	1	3	1	2	4	4
Science	4	19	7	23	10	17	21	19
Social Studies	4	19	4	13	2	3	10	9
Art	1	5	2	7	1	2	4	4
Vocational Education	2	10	3	10	16	28	21	19
Computer Education	5	24	13	43	26	45	44	40
Other Subjects	2	10	4	13	8	14	14	13

*Respondents could mark more than one category, therefore, per cent may total more than 100%.

most frequently mentioned sources were staff and students with 49% and 38% reported respectively. Table 12 and Appendix 4D report additional statistics with respect to sources of software.

What Peripherals are Used in Schools?

The most frequent responses for types of computer peripherals used in the schools were disk drives, printers and tape drives. Sixty-six per cent of the schools use disk drives with a highly significant use of disk drive by grade level relationship being observed ($\chi^2 = 9.74$, 2 df, $p = .008$). Fifty-two per cent of the elementary schools, 50% of the junior high schools and 79% of the senior high schools currently use disk drives. Eighty-eight per cent of the senior high schools, 48% of the elementary schools, and 43% of the junior high schools use printers. There was a significant grade level by use of printer relationship. ($\chi^2 = 22.94$, 2 df, $p < .001$). Further information can be found in Table 13 and Appendix 4E on the use of tape drives, modems, videotape/videodisks, etc.

What Per Cent of Staff Use Computers?

The per cent of staff using computers had a significant relationship with grade level ($F = 14.69$, 2 df, $p < .01$). Elementary schools averaged 27% of staff using computers whereas junior high school and senior high school staffs averaged about 11% and 8% respectively. Overall, only 12% of staffs use computers in schools that reported using computers.

Is Inservice Training Available?

Inservice training of staff was available in 48% of the schools. There was, however, a significant relationship between the availability

Table 12

Sources of Software for Washington Schools by Grade Level

(109 valid cases)

Source	Elementary		Junior High		Senior High		Total	
	Number (N=21)	*Per Cent	Number (N=30)	*Per Cent	Number (N=58)	*Per Cent	Number (N=109)	*Per Cent
Computer Vendor	13	62	15	50	35	60	63	58
Mail Order	7	33	9	30	14	24	30	28
Written by Staff	6	29	16	53	31	53	53	49
User Group or Exchange	1	5	5	17	16	28	22	20
Copies of Programs	1	5	9	30	16	28	26	24
Written by Student	3	14	10	33	28	48	41	38
Other Sources	1	5	2	7	1	2	4	4

Table 13

Types of Computer Peripherals Used in Washington Schools by Grade Level

(109 valid cases)

Peripheral	Elementary		Junior High		Senior High		Total	
	Number (N=21)	*Per Cent	Number (N=30)	*Per Cent	Number (N=58)	*Per Cent	Number (N=109)	* Per Cent
Disk Drive	11	52	15	50	46	79	72	66
Printer	10	48	13	43	51	88	74	68
Videotape/Videodisk	2	10	5	17	2	3	9	8
Tape Drive	5	24	12	40	14	24	31	28
Modem	3	14	3	10	13	22	19	17
Hard Disk	0	0	0	0	1	2	1	1
Other	0	0	0	0	1	2	1	1

*Respondents could mark more than one category, therefore, per cent may total more than 100%.

of inservice training and grade level (X^2 = 6.59, 2 df, p = .037). Inservice was available in 62% of the elementary schools and 60% of the junior high schools while only 36% of the high schools had inservice available for their staffs.

When inservice wasn't available, the staffs were self-taught. There was a significant grade level relationship with self-taught training. Senior high schools and junior high schools reported approximately 66% and 60% of their staffs, respectively, were self-taught as opposed to 33% for elementary schools. The next most frequent source of training when inservice was not available was college coursework. Forty-six per cent of the schools reported this as a source of training. College coursework also had a highly significant relationship (X^2 = 13.75, 2 df, p = .01) with grade level. Sixty per cent of the senior high schools, 40 per cent of the junior high schools and 14% of the elementary schools report this as a major source of training for their staffs when inservice was not available. Further information on types of training (e.g. from other staff and vendor classes) can be found in Table 14 and Appendix 4F.

The regular school budget was a major source of funding for computers and related materials for 75% of the schools using computers. The next most frequent source (26%) mentioned was federal grants. Only about 16% reported using state monies. See Table 15 and Appendix 4G for additional data.

Is Computer-Related Curricula Available?

Approximately 51% of the schools reported having curricula in computer programming. Twenty-nine per cent of the elementary schools, 37% of the junior high schools and 66% of the senior high schools reported having curricula in programming. A significant relationship between grade level

Table 14

Type of Staff Training on Use of Computers in Washington State Schools by Grade Level

(109 valid cases)

Type of Training	Elementary		Junior High		Senior High		Total	
	Number (N=21)	* Per Cent	Number (N=30)	* Per Cent	Number (N=58)	*Per Cent	Number (N=109)	* Per Cent
Inservice	13	62	18	60	21	36	52	48
Self-Taught	7	33	18	60	38	66	63	58
College Coursework	3	14	12	40	35	60	50	46
From Other Staff	5	24	8	27	9	16	22	20
User Groups	1	5	4	13	2	3	7	6
Vendor Classes	2	10	8	27	9	16	19	17
Other Ways	1	5	0	0	0	0	1	1

Table 15

Funding Sources for Computers in Washington State Schools by Grade Level

(109 valid cases)

Funding Source	Elementary		Junior High		Senior High		Total	
	Number (N=21)	* Per Cent	Number (N=30)	* Per Cent	Number (N=58)	* Per Cent	Number (N=109)	* Per Cent
PTA, PTSA, PTO, etc.	3	14	7	23	1	2	11	10
State Grant	3	14	2	7	12	21	17	16
Staff Contribution	1	5	3	10	0	0	4	4
Private Donation	1	5	3	10	6	10	10	9
Federal Grant	7	33	7	23	14	24	28	26
Regular School Budget	13	62	22	73	47	81	82	75
Other Sources	5	24	6	20	4	7	15	14

*Respondents could mark more than one category, therefore, per cent may total more than 100%.

and use of programming curricula (χ^2 = 11.57, 2 df, p = .003) was observed. Only about 28% of the schools responded as having curricula about computers. Approximately 31% of the senior high schools, 30% of the junior high schools, and 14% of the elementary schools reported having curricula about computers.

Do Schools Have Computer-Oriented SLO's?

Approximately 27% of the schools reported having computer-oriented student learning objectives (SLOs) with the majority being senior high schools. Thirty-three per cent of the high schools reported having computer SLOs with 63% of these indicating the SLOs were restricted to the school and were not district-wide. However, of the 20% of the junior high schools reporting computer SLOs, two-thirds were district-wide. Of the 21% of the elementary schools reporting SLOs, three-fourths were district-wide.

Projected Computer-Related Expenditures

Sixty-seven per cent of the schools that now use computers reported that microcomputers would be included in their budgets in the next two years while only 48% of the nonusers plan to purchase microcomputers. Five per cent of the nonusers in contrast to 39% of the users expect to budget for peripherals. Only 19% of the nonusers expect to budget for computer-related library materials whereas 38% of the users expect to do the same. In addition, 71% of the users have plans to purchase software compared to 43% of the nonusers. In all of the above cases there was a significant relationship between whether schools now use computers

and the probability they will spend additional monies for computer-related items. Appendixes 4H and 4I give detailed information concerning how schools, when classified according to district size and grade level, plan to spend money over the next two years on computer-related items.

CONCLUSIONS

Washington State schools are actively involved in the use of computers. With over a 60% return on the survey, results indicate that approximately 60% of all Washington State public schools currently use computers. This use is about the same overall for large and small districts but tends to vary considerably by grade level. Roughly 36% of the elementary schools currently use computers, but the percentage of junior high schools and senior high schools that use computers is more than double that of the elementary school. The percentage of Washington State schools using computers appears to be greater than the national percentage of schools using computers.

Of those Washington State public schools that currently use computers, high schools still seem to be the main repository of the computers with an average of about 5 computers per high school. Junior high schools and elementary schools only have about 3 computers per school. Although senior high schools have more computers, they also tend to have a higher student to computer ratio than either junior high schools or elementary schools.

Large district schools tend to have more computers per school than small district schools but small district schools have a student to computer ratio approximately one-half that of large district schools. The picture of computer availability is definitely related at this time to the grade

level of the school and to district size.

Senior high schools tend to use their computers 1/2 more hours per week then either junior high schools or elementary schools. This result is an important consideration in interpreting the number of students per computer as discussed earlier. In fact, large district senior high schools averaged about 23 hours of use per week. The overall average for schools with computers, though, was around 18.5 hours per week.

The most common type of computer in the schools is the microcomputer. APPLES and TRS-80s are the most popular brands of computers with many schools frequently having both. Although time-share terminals used to be quite popular in the schools, the results would indicate that their popularity is quickly coming to an end.

Further discussion will be done by summarizing the results at specific grade levels. This will probably present the best picture of computer use in Washington State public schools. The typical description of each will be based on the average response of each item for that particular grade level.

The typical Washington State public elementary school does not have a microcomputer. However, the elementary school that has a computer can be described as follows:

1) The school has approximately 3 computers.
2) The computers are probably Apple or TRS-80 microcomputers.
3) The school has one microcomputer for every 184 students.
4) Over a fourth of the staff is actively involved in using the computers.
5) Each computer is used about 15 hours per week.
6) The computers are primarily used to teach using CAI. To a lesser extent, they are used to teach programming and to teach about computers.

7) The school tends to use software in the classroom for mathematics and language arts. Reading and computer education are subjects that also occasionally use software.

8) The software for the school was probably purchased from a computer vendor. To a lesser extent, mail order and staff were sources of software.

9) The school probably has disk drives for its computers instead of tape drives. The school may also have a printer.

10) Inservice training has been available to the staff but some are self-taught or have gotten training from other staff.

11) Most of the funding has come from the regular school budget and occasionally from federal grants.

12) The school does not have much curricula in computer programming or about computers.

13) The school probably has not established formal student learning objectives.

14) The major computer-related purchases over the next two years will be software. To a much lesser extent, microcomputers, computer-related library materials, peripherals and staff training will be included in the school budget.

15) Elementary schools that do not currently have computers are hesitant to purchase microcomputers and software.

A typical Washington State public junior high school (or middle school) has computers. The junior high school's use of computers can be described as:

1) There are 3 computers in the school.

2) The computers are probably Apple or TRS-80 microcomputers.

3) There are about 379 students for every computer.

4) Only about 10% of the staff are actively involved in using the computers.

5) Each computer is used about 16 hours a week.

6) The computer is used primarily for teaching about computers, CAI, and teaching programming. It is also frequently used by students outside of class.

7) The school uses software in the classroom for mathematics instruction and computer education.

8) Software was probably written by someone on the staff or purchased from a computer vendor. Less frequently software is written by students, purchased from mail order or copied from other programs.

9) The school may use disk drives and/or tape drives with their computers. There may be a printer in the school.

10) Inservice training has probably been available to the staff. Many of the computer-using staff have been self-taught or have taken college coursework. Some also attended vendor classes or received training from other staff members.

11) Most of the funding for computers has been from regular school budget with occasional contributions from federal grants and parent-teacher organizations.

12) The school probably does not have curricula about computers or established curricula for programming.

13) There tend not to be computer-related student learning objectives.

14) Most of the junior high schools will purchase more microcomputers and software in the next two years. The school will also invest in staff training. The school also may invest in additional

peripherals and computer-related library materials.

At the senior high school level, Washington State public schools are very active in their use of microcomputers. The typical senior high school's use of computers can be summarized as:

1) The school has approximately 5 computers.
2) The computers are probably Apple or TRS-80 microcomputers but may occasionally be time-share terminals with computers outside the school.
3) There are approximately 237 students per computer.
4) Less than 8 per cent of the staff are actively involved in using the computers.
5) Each computer is used more than 20 hours per week.
6) The computers are primarily used for teaching programming. They also are used for teaching about computers and for use by students outside of class. They may be frequently used for CAI and business education.
7) Software is used in the classrooms for mathematics, computer education and business education.
8) Software was more than likely purchased from a computer vendor, written by staff or written by students. About a fourth of the time we also find mail order, user groups and copies of programs being sources of software.
9) The school has disk drives and printers. Tape drives and modems are present occasionally.
10) Inservice training probably hasn't been offered. Most of the computer-using staff is self-taught or has taken college coursework for their training.

11) Most of the funding comes from regular school budget but occasionally state or federal grants contribute some funding.

12) The school has curricula in computer programming but has little or no curricula about computers.

13) Only about a third of the time will student learning objectives be found. These objectives tend to be in-school only and not district-wide.

14) More microcomputers and software will be purchased over the next two years. More peripherals, computer-related library materials, and staff training will also be considered as future budget items.

Without a doubt computers, in particular the microcomputer, are having an impact on our public schools. This impact is being felt in small and large districts as well as at every grade level. However, much work must be done before the computer ceases to be something we teach about and becomes a tool to be used to enhance what and how we teach.

REFERENCES

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APPENDIX 1

Computer Use Survey

School name_____ District_____

1. Are computers used in your school? ____Yes ____No
   (If No, then go directly to Question #16)

2. What kinds of computers do you use in your school?
   __Apple
   __Atari
   __Commodore
   __Texas Instruments
   __Other (Please Specify)
   __Radio Shack
   __Time-share terminal(s) with the main computer at another location.
   __Time-share terminal(s) with the main computer at your school

   _____

3. How many computers does your school have on a permanent basis?
   _____

4. How many computers does your school use on a rotating basis with other schools?
   _____

   4a. If you rotate computers between schools, how long does your school keep them? _____

5. On an average, how many hours a week is each computer used?
   _____

6. Which of the following sources of funding have you used for your school's computers and related materials?
   __PTA, PTSA, PTO, etc.
   __State grant
   __Staff
   __Other
   __Private donation
   __Federal grant
   __Regular school budget

7. Which of the following are current uses of your computers?
   __Computer-assisted instruction
   __Teaching computer programming
   __Administration (attendance, etc.)
   __Classroom management (grades, etc.)
   __Student access outside of regular classroom hours
   __Teaching about computers
   __Other
   __Computer clubs
   __Business Ed
   __Vocational Ed

8. Does your school use software (programs) in the classroom? __Yes __No
   (If No, please go directly to Question #11).

9. Please check sources of software that your school uses.
   __Purchased from a computer vendor
   __Purchased through mail order
   __Written by a staff member
   __Other
   __User's group or exchange
   __Copied from another program
   __Written by a student

10. Please check subject areas of software that your school uses.

__Math
__Language Arts
__Reading
__Business Ed
__History
__Other
__Science
__Social Studies
__Art
__Vocational Ed
__Computers

11. What periphersals (accessories) are used in your school?

__Disk drive
__Printer
__Videotape or video-disk
__Other
__Tape drive
__Telephone modem
__Hard disk

12. What percentage of your staff is actively involved in using computers?

_____

13. Has in-service training in the use of computers been available for your staff? __Yes __No

14. If not, how have the teachers using computers been trained?

__Self-taught
__Coolege credit courses
__Other staff members
__Other
__User's group
__Vendor classes or training (e.g., Radio Shack)

15. Do you use curricula for any of the following subjects?

__Computer programming
__Business Ed
__Teaching about computers
__Vocational Ed

16. Do you have computer-oriented SLOs? __Yes __No

16a. If so, are they __ in-school only or __ district wide?

17. Please check any items that you plan to include in your budget(s) in the next two years.

__Microcomputers
__Consultant time
__Peripherals
__Computer-oriented curricula (other than software)
__Computer-oriented library/resource materials (e.g., magazines, books, films, etc.)
__Software
__Staff training

APPENDIX 2

Distribution of Mailings

(Number Mailed by ESD, Grade, and Size)

EDUCATIONAL SERVICE DISTRICT #		Elementary		Jr. High		Sr. High		Total	
		DISTRICT SIZE Small	Large	DISTRICT SIZE Small	Large	DISTRICT SIZE Small	Large	DISTRICT SIZE Small	Large
101	Mailed	6	6	0	6	6	6	12	18
	Returns	2	5	0	5	5	5	7	15
105	Mailed	6	6	2	6	6	6	14	18
	Returns	0	2	0	3	2	3	2	8
112	Mailed	4	6	3	6	5	6	12	18
	Returns	2	6	1	3	1	2	4	11
113	Mailed	6	6	2	6	6	6	14	18
	Returns	5	3	1	4	3	6	9	13
114	Mailed	6	6	3	5	6	6	15	17
	Returns	2	3	3	4		3	10	10
121	Mailed	8	6	1	6	5	6	14	18
	Returns	5	6	1	2	4	5	10	13
123	Mailed	6	6	3	6	6	6	15	18
	Returns	4	3	2	4	4	3	10	10
171	Mailed	6	3	1	3	6	3	13	9
	Returns	1	2	1	2	4	3	6	7
189	Mailed	6	6	0	6	6	6	12	18
	Returns	4	3	0	5	5	5	9	13
Sub Total	Mailed	54	51	15	50	52	51	121	152
	Returns	25(46%)	33(65%)	9(60%)	32(64%)	33(63%)	35(69%)	67(55%)	100(66%)

Total					
	Mailed	105	65	103	273
	Returns	58(55%)	41(63%)	68(66%)	167(61%)

APPENDIX 3A

Computer Use in Schools by ESD by Grade Level

ESD	Question Response	Elem 1	Mid/Jr 2	Sr 3	Response Total	Cum Total
101	Yes	4	5	9	18	22
	No	3	0	1	4	
105	Yes	1	3	4	8	10
	No	1	0	1	2	
112	Yes	5	2	2	9	15
	No	3	2	1	6	
113	Yes	2	3	9	14	22
	No	6	2	0	8	
114	Yes	2	6	7	15	20
	No	3	1	1	5	
121	Yes	5	3	9	17	23
	No	6	0	0	6	
123	Yes	2	4	6	12	24
	No	5	2	1	8	
171	Yes	0	2	4	6	13
	No	3	1	3	7	
189	Yes	0	2	8	10	22
	No	7	3	2	12	
Sub Total	Yes	21	30	58	109	167
	No	37	11	10	58	
Total		58	41	68	167	

APPENDIX 3B

Computer Use in Schools by ESD by District Size

ESD	Question Response	District Size ≤2000	District Size >2000	Response Total	Cum Total
101	Yes	5	13	18	22
	No	2	2	4	
105	Yes	3	9	12	14
	No	1	1	2	
112	Yes	2	7	9	15
	No	2	4	6	
113	Yes	5	9	14	22
	No	4	4	8	
114	Yes	8	7	15	20
	No	2	3	5	
121	Yes	7	10	17	23
	No	3	3	6	
123	Yes	5	7	12	20
	No	5	3	8	
171	Yes	3	4	7	14
	No	4	3	7	
189	Yes	5	6	11	23
	No	5	7	12	
Sub Total	Yes	43	72	115	
	No	28	30	58	
Total		71	102	173	

APPENDIX 3C

Computer Use in Schools by ESD by District Size by Grade Level

ESD	Question Response	District ≤2000 Grade Level Elem	Jr Hi	Sr Hi	District >2000 Grade Level Elem	Jr Hi	Sr Hi	Response Total	Cum Total
101	Yes	1	0	4	3	5	5	18	22
	No	1	0	1	2	0	0	4	
105	Yes	0	0	1	1	3	3	8	10
	No	0	0	1	1	0	0	2	
112	Yes	2	0	0	3	2	2	9	15
	No	0	1	1	3	1	0	6	
113	Yes	2	0	3	0	3	6	14	22
	No	3	1	0	3	1	0	8	
114	Yes	1	3	4	1	3	3	15	20
	No	1	0	1	2	1	0	5	
121	Yes	2	1	4	3	2	5	17	23
	No	3	0	0	3	0	0	6	
123	Yes	1	1	3	1	3	3	12	20
	No	3	1	1	2	1	0	8	
171	Yes	0	1	1	0	1	3	6	13
	No	1	0	3	2	1	0	7	
189	Yes	0	0	4	0	2	4	10	22
	No	4	0	1	3	3	1	12	
Sub Total									
	Yes	9	6	24	12	24	34	109	
	No	16	3	9	21	8	1	58	
Total		25	9	33	33	32	35	167	

APPENDIX 4A

Types of Computers Used in Washington State Schools

Types of Computers	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Apple	4	44%	7	58%	11	52%	3	50%	9	38%	12	40%	15	63%	22	65%	37	64%	22	56%	38	54%	60	55%
Atari	0	0%	1	8%	1	5%	0	0%	2	8%	2	7%	0	0%	1	3%	1	2%	0	0%	4	6%	4	4%
Commodore	0	0%	0	0%	0	0%	0	0%	2	8%	2	7%	4	17%	4	12%	8	14%	4	10%	6	9%	10	9%
TI	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	3%	1	2%	0	0%	1	1%	1	1%
TRS-80	5	56%	4	33%	9	43%	3	50%	11	46%	14	47%	13	54%	17	50%	30	52%	21	54%	32	46%	53	49%
Time-Share w/elsewhere	1	11%	2	17%	3	14%	0	0%	4	17%	4	13%	2	8%	14	41%	16	28%	3	8%	20	29%	23	21%
Time-Share w/school	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Other	0	0%	0	0%	0	0%	1	17%	1	4%	2	7%	1	4%	5	15%	6	10%	2	5%	6	9%	[illegible]	7%
Number of Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4B

Current Uses of Computers in Washington State Schools

Current Uses	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
CAI	8	89%	7	58%	15	71%	2	33%	14	58%	16	53%	10	42%	16	47%	26	45%	20	51%	37	53%	57	52%
Teaching Programming	5	56%	6	50%	11	52%	2	33%	14	58%	16	53%	21	88%	26	77%	47	81%	28	72%	46	66%	74	68%
Administration	1	11%	1	8%	2	10%	1	17%	2	8%	3	10%	1	4%	15	44%	16	28%	3	8%	18	26%	21	19%
Classroom Management	2	22%	2	17%	4	19%	1	17%	6	25%	7	23%	8	33%	13	38%	21	36%	11	28%	21	30%	32	29%
Student Access outside class hours	3	33%	4	33%	7	33%	3	50%	18	75%	21	70%	13	54%	18	53%	31	53%	19	49%	40	57%	59	54%
Teaching about Computers	4	44%	5	42%	9	43%	3	50%	15	63%	18	60%	13	54%	21	62%	34	59%	20	51%	41	59%	61	56%
Computer Clubs	1	11%	0	0%	1	5%	0	0%	6	25%	6	20%	4	17%	4	12%	8	14%	5	13%	10	14%	15	14%
Business Education	0	0%	1	8%	1	5%	0	0%	1	4%	1	3%	11	46%	14	41%	25	43%	11	28%	16	23%	27	25%
Vocational Education	0	0%	1	8%	1	5%	0	0%	0	0%	0	0%	3	13%	6	18%	9	16%	3	8%	7	11%	10	9%
Other Uses	2	22%	2	17%	4	19%	2	33%	3	13%	5	17%	3	13%	3	9%	6	10%	7	18%	8	11%	15	14%
# Respondents w/Computers (valid cases)	9 (25)		13 (33)		21 (58)		6 (9)		24 (32)		30 (41)		24 (33)		34 (35)		58 (68)		39 (67)		70 (100)		109 (167)	

APPENDIX 4C

Subject Areas Using Software in Washington State Schools

Subject Areas	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Math	7	78%	7	58%	14	67%	4	67%	14	58%	18	60%	11	46%	21	62%	32	55%	22	56%	42	60%	64	59%
Language Arts	5	56%	4	33%	9	43%	1	17%	6	25%	7	23%	5	21%	5	15%	10	17%	11	28%	15	21%	26	23%
Reading	3	33%	3	25%	6	29%	0	0%	7	29%	7	23%	7	29%	2	6%	9	16%	10	26%	12	17%	22	20%
Business Education	0	0%	1	8%	1	5%	0	0%	1	4%	1	3%	10	42%	14	41%	24	41%	10	26%	16	23%	26	24%
History	1	11%	1	8%	2	10%	1	17%	0	0%	1	3%	0	0%	1	3%	1	2%	2	5%	2	3%	4	4%
Science	2	22%	2	17%	4	19%	2	33%	5	21%	7	23%	1	4%	9	27%	10	17%	5	13%	16	23%	21	19%
Social Studies	2	22%	2	17%	4	19%	0	0%	4	17%	4	13%	1	4%	1	3%	2	3%	3	8%	7	10%	10	9%
Art	1	11%	0	0%	1	5%	0	0%	2	8%	2	7%	0	0%	1	3%	1	2%	1	3%	3	4%	4	4%
Vocational Education	1	11%	1	8%	2	10%	0	0%	3	13%	3	10%	6	25%	10	29%	16	28%	7	18%	14	20%	22	20%
Computers	4	44%	1	8%	5	24%	2	33%	11	46%	13	43%	12	50%	14	41%	26	45%	18	46%	26	37%	44	40%
Other	2	22%	0	0%	2	10%	0	0%	4	17%	4	13%	2	8%	6	18%	8	14%	4	10%	10	14%	14	13%
# Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4D

Sources of Software Utilized by Washington State Schools

Sources f/ Software	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL			
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Computer Vendor	7	78%	6	50%	13	62%	2	33%	13	54%	15	50%	16	67%	19	56%	35	60%	25	64%	38	54%	63	58%
Mail Order	3	33%	4	33%	7	33%	3	50%	6	25%	9	30%	7	29%	7	21%	14	24%	13	33%	17	24%	30	28%
Written by Staff	2	22%	4	33%	6	29%	3	50%	13	54%	16	53%	13	54%	18	53%	31	53%	18	46%	35	50%	53	49%
User's Group or Exchange	0	0%	1	8%	1	5%	0	0%	5	21%	5	17%	8	33%	8	24%	16	28%	8	21%	14	20%	22	20%
Copied fm Another Program	0	0%	1	8%	1	5%	1	17%	8	33%	9	30%	8	33%	8	24%	16	28%	9	23%	17	24%	26	24%
Written by Student	0	0%	3	25%	3	14%	1	17%	9	38%	10	33%	12	50%	16	47%	28	48%	13	33%	28	40%	41	38%
Other Sources	0	0%	1	8%	1	5%	0	0%	2	8%	2	7%	0	0%	1	3%	1	2%	0	0%	4	6%	4	4%
Use Software in Classroom	7	78%	7	58%	14	67%	4	67%	16	67%	20	67%	17	71%	24	71%	41	71%	28	72%	47	67%	75	69%
# Respondents w/computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4E

Types of Computer Peripherals Used by Washington State Schools

Types of Peripherals	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL			
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Disk Drive	3	33%	8	67%	11	52%	3	50%	12	50%	15	50%	20	83%	26	77%	46	79%	26	67%	46	66%	72	66%
Printer	3	33%	7	58%	10	48%	2	33%	11	46%	13	43%	20	83%	31	91%	51	88%	25	64%	49	70%	74	68%
Videotape or Videodisk	1	11%	1	8%	2	10%	1	17%	4	17%	5	17%	1	4%	1	3%	2	3%	3	8%	6	9%	9	8%
Tape Drive	2	22%	3	25%	5	24%	4	67%	8	33%	12	40%	6	25%	8	24%	14	24%	12	31%	19	27%	31	28%
Telephone Modem	1	11%	2	17%	3	14%	0	0%	3	13%	3	10%	1	4%	12	22%	13	22%	2	5%	17	24%	19	17%
Hard Other Disk	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	3%	1	2%	0	0%	1	1%	1	1%
Other	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	3%	1	2%	0	0%	1	1%	1	2%
# Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4F

Types of Training in Computer Use for Washington State Schools

Type of Teacher Training	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Inservice Training	7	78%	6	50%	13	62%	4	67%	14	58%	18	60%	7	29%	14	41%	21	36%	18	46%	34	49%	52	48%
Self-Taught	3	33%	4	33%	7	33%	4	67%	14	58%	18	60%	18	75%	20	59%	38	66%	25	64%	38	54%	63	58%
College Credit Courses	1	11%	2	17%	3	14%	4	67%	8	33%	12	40%	16	67%	19	56%	35	60%	21	54%	29	41%	50	46%
Other Staff Members	2	22%	3	25%	5	24%	1	17%	7	29%	8	27%	3	13%	6	18%	9	16%	6	15%	16	23%	22	20%
User's Group	0	0%	1	8%	1	5%	1	17%	3	13%	4	13%	1	4%	1	3%	2	3%	2	5%	5	7%	7	6%
Vendor Classes or Training	0	0%	2	17%	2	10%	1	17%	7	29%	8	27%	3	13%	6	18%	9	16%	4	10%	15	21%	19	17%
Other	1	11%	0	0%	1	5%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	3%	0	0%	1	1%
# Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4G

Sources of Funding for Computers in Washington State Schools

Sources of Funding	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL			
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Lg Dist Schools		All Schools	
PTA, PTSA PTO, etc.	0	0%	3	25%	3	14%	0	0%	7	29%	7	23%	0	0%	1	3%	1	2%	0	0%	11	16%	11	10%
State Grant	2	22%	1	8%	3	14%	1	17%	1	4%	2	7%	6	25%	6	18%	12	21%	9	23%	8	11%	17	16%
Staff Contribution	0	0%	1	8%	1	5%	0	0%	3	13%	3	10%	0	0%	0	0%	0	0%	0	0%	4	6%	4	4%
Private Donation	0	0%	1	8%	1	5%	0	0%	3	13%	3	10%	5	21%	1	3%	6	10%	5	13%	5	7%	10	9%
Federal Grant	3	33%	4	33%	7	33%	3	50%	4	17%	7	23%	5	21%	9	27%	14	24%	11	28%	17	24%	28	26%
Regular School Budget	6	67%	7	58%	13	62%	3	50%	19	79%	22	73%	16	67%	31	91%	47	81%	25	64%	57	81%	82	75%
Other Sources	2	22%	3	25%	5	24%	1	17%	5	21%	6	20%	1	4%	3	9%	4	7%	4	10%	11	16%	15	14%
Number of Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4H

Prospective Computer Related Budget Items in Washington State Schools That Do Use Computers

Future Budget Items	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Micro-computers	5	56%	3	25%	8	38%	5	83%	17	71%	22	73%	17	71%	26	77%	43	74%	27	69%	46	66%	73	67%
Consultant Time	0	0%	0	0%	0	0%	0	0%	3	13%	3	10%	1	4%	4	12%	5	9%	1	3%	7	10%	8	7%
Peri-pherals	4	44%	2	17%	6	29%	2	33%	10	42%	12	40%	10	42%	16	47%	26	45%	16	41%	28	40%	44	40%
Computer-Oriented Curricula	2	22%	2	17%	4	19%	2	33%	5	21%	7	23%	5	21%	6	18%	11	19%	9	23%	13	19%	22	20%
Computer-Oriented Library/ Resource Materials	4	44%	4	33%	8	38%	1	17%	11	46%	12	40%	10	42%	12	35%	22	38%	15	39%	27	39%	42	38%
Software	6	67%	8	67%	14	67%	5	83%	20	83%	25	83%	18	75%	23	68%	41	71%	29	74%	51	73%	80	73%
Staff Training	3	33%	3	25%	6	29%	4	67%	11	46%	15	50%	8	33%	12	35%	20	35%	15	38%	26	37%	41	38%
# Respondents w/Computers	9		12		21		6		24		30		24		34		58		39		70		109	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	

APPENDIX 4I

Prospective Computer Related Budget Items in Washington State Schools That Do Not Use Computers

Future Budget Items	ELEMENTARY						JUNIOR HIGH						SENIOR HIGH						TOTAL					
	Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools		Sm Dist Schools		Lg Dist Schools		All Schools	
Micro-Computers	7	44%	8	38%	15	41%	1	33%	6	75%	7	64%	5	56%	1	100%	6	60%	13	46%	15	50%	28	48%
Consultant Time	3	19%	3	14%	6	16%	0	0%	1	13%	1	9%	0	0%	0	0%	0	0%	3	11%	4	13%	7	12%
Peri-pherals	0	0%	0	0%	0	0%	0	0%	2	25%	2	18%	1	11%	0	0%	1	10%	1	4%	2	7%	3	5%
Computer-Oriented Curricula	2	13%	1	5%	3	8%	0	0%	3	38%	3	27%	0	0%	0	0%	0	0%	2	7%	4	13%	6	10%
Computer-Oriented Library/ Resource Materials	3	19%	4	19%	7	19%	0	0%	2	25%	2	18%	2	22%	0	0%	2	20%	5	18%	6	20%	11	19%
Software	6	38%	7	33%	13	35%	0	0%	6	75%	6	55%	5	56%	1	100%	6	60%	11	39%	14	47%	25	43%
Staff Training	6	38%	7	33%	13	35%	2	67%	3	38%	5	45%	4	44%	0	0%	4	40%	12	43%	10	33%	22	38%
# Respondents w/Computers	16		21		37		3		8		11		9		1		10		28		30		58	
(valid cases)	(25)		(33)		(58)		(9)		(32)		(41)		(33)		(35)		(68)		(67)		(100)		(167)	